HONOLULU
LA JOLLA
MONTEREY
TIBURON

SOUTHWEST FISHERIES CENTER

MONTHLY REPORT - FEBRUARY 1980

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SOUTHWEST FISHERIES CENTER

LA JOLLA, CALIFORNIA

HONOLULU LABORATORY

LA JOLLA LABORATORY

TIBURON LABORATORY

PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - FEBRUARY 1980

STATUS OF PUBLICATIONS

Published

Barham, Eric G., Jay C. Sweeney, Stephen Leatherwood, Robert K. Begg and Cecilia L. Barham. Aerial census of the bottlenose dolphin, Tursiops truncatus, in a region of the Texas coast. Fish. Bull. U.S., 77(3):585-595.

On five replicate aerial surveys in late March 1978, the bottlenose dolphin, Tursiops truncatus, herds were sighted and their numbers estimated in 21 strip transects flown across bays and channels between barrier islands and the coast from Port Aransas northeast to Matagorda, Texas. The transects were spaced at 4.63 km intervals and herds were scouted in about 800 m wide strips totaling 436 km in length, providing approximately 17% coverage of the area. On surveys 1-4 (survey 5 was excluded from population calculations because it was conducted in adverse weather) 133 bottlenose dolphin herds were sighted, containing an estimated 916 animals. Within these strips the mean herd size was 6.95 animals and mean herd density was 0.0947/km^2, extrapolating to a population estimate of 1,319 dolphins and a density estimate of 0.752/km^2 for the entire area. These figures are relatively high in contrast to recent studies in other environments. About half the herds were feeding and approximately one-third were traveling. Sightings were most frequent in ship channels, shallow areas inside barrier islands, and near shore. There were several sources of bias in our measurements, and we consider the results to be conservative.

THIS REPORT DOES NOT CONSTITUTE PUBLICATION AND IS FOR INFORMATION ONLY.

Brill, R.W. and A.E. Dizon. 1979. Red and white muscle fibre activity in swimming skipjack tuna, Katsuwonus pelamis (L.). J. Fish. Biol. 15:679-685.

To test the hypothesis that white muscle fibre portions of the myotomes are used at sustainable swimming speeds, skipjack tuna, Katsuwonus pelamis, were forced to swim against various current velocities in a water tunnel while electrical activity of the red and white muscle fibres was simultaneously recorded. Eight fish were tested, five fish graded white muscle fibres into activity at swimming speeds above their minimum hydrostatic equilibrium speed, but well below the estimated maximum sustainable swimming speed of skipjack tuna. Three other fish showed white muscle fibre activity at minimum swimming speeds, a possibly abnormal condition.

Hunter, J. Roe and Stephen R. Goldberg. 1980. Spawning incidence and batch fecundity in northern anchovy, Engraulis mordax. Fish. Bull., U.S. 77(3):641-652.

Histological criteria were developed to age postovulatory follicles from examination of laboratory-spawned northern anchovy and used to estimate the frequency of spawning of natural populations. One-day-old, postovulatory follicles were the preferred estimator of spawning frequency; 48 hours after spawning postovulatory follicles could not be consistently identified because of their rapid degeneration; and the occurrence of postovulatory follicles less than 24 hours old was affected by hour of sampling and sexual composition of the school. The nightly spawning incidence was estimated to be 16±4% of the northern anchovy population in February and 12% in March. Thus, females spawned about every 6-8 days during the peak of the breeding season. The rate of oocyte development corresponded with this reproductive rate, indicating that a new mode of yolked oocytes matured about once a week. Nearly all eggs in the most advanced mode in the ovary were spawned in one night and the number of eggs spawned was estimated to be 389±59 eggs/g of female (ovary-free wet weight). The high spawning frequency and the prolonged breeding season of the northern anchovy indicate that total fecundity may be limited by food availability and energy reserves.

Weihs, Daniel. 1980. Energetic significance of changes in swimming modes during growth of larval anchovy, Engraulis mordax. Fish. Bull., U.S. 77(3):597-604.

The swimming behavior of larval northern anchovy, Engraulis mordax, in the first few days after hatching is different from the intermittent beat-and-glide mode used by older larvae and later stage fish. It is shown mathematically that the bursts of continuous swimming typical of these yolk-sac larvae is the more

efficient form of locomotion at this stage, because of their small size. This advantage changes as the larva grows out of the size range in which water viscosity is the dominant factor (small Reynolds number). When the larva reaches a length of 5 mm, typical Reynolds numbers are such that intermittent swimming gradually becomes the more economical mode, and this mode is dominant when the larvae reach 15 mm. These analytical results compare well with observed behavioral changes.

Approved by Center Director

Kaya, Calvin M., Andrew E. Dizon and Sharon D. Hendrix. Induced spawning of a tuna, Euthynnus affinis. For consideration for publication in Fish. Bull., U.S. as a Note.

Stuntz, Warren E. The behavior of marine animals volume 3: Cetaceans. For consideration for publication as a Book Review in the Transactions of the American Fisheries Society.

Translations

Japan International Cooperation Agency (Kokusai Kyoryoku Jigyodan). 1977. Report on the survey of fishery and agriculture in Tonga, Western Samoa, and Fiji (Tonga, Nishi-Samoa, Fiji shokoko ni okeru gyogyo, nogyo jijyo chosa hokoku). Rep. 77-25, September 1977. (Engl. transl. by Tamio Otsu of pages 1-4, 7-29, 46-64, and 74-100 which pertain to fisheries surveys. The untranslated portions deal with agriculture; 1980, 64 p., Transl. No. 44; available Southwest Fish. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96812).

Suisan Sekai. 1979. Mie Prefecture skipjack tuna fishermen facing mounting problems and seriously considering reducing number of fishing vessels (Enyo kinkai katsuo ipponzuri gyogyo gensen wo shinken ni kento suru Mie-Ken sen). Suisan Sekai 28(8):78-82. (Engl. transl. by Tamio Otsu, 1980, 9 p., Transl. No. 45; available Southwest Fish. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96812.)

HONOLULU LABORATORY

RESOURCE ASSESSMENT AND DEVELOPMENT INVESTIGATIONS (RADI)

Statistical Procedures Developed for Estimating Size of Monk Seal Populations

Dr. Jerry A. Wetherall, Leader, Pelagic Resources Stock Assessment Study Task, has developed new statistical procedures for estimating the size of Hawaiian monk seal, Monachus schauinslandi, populations on the basis of counts on hauled out seals during the molting season. Beginning with an attempt to improve procedures previously developed for estimating monk seal populations, Wetherall constructed the theoretical basis for a general model of the molting cycle. This provided both change-in-ratio and least squares estimators of the population size. The estimators are based on counts of the number of seals in pre-molt, molt, and post-molt state on a series of beach surveys, and auxiliary information on the probability densities of pre-molt time and duration of molt. Wetherall is now completing work on variance estimation and drafting an administrative report of his findings on the subject.

Fishery Economic Studies Continue

Dr. Michael F. Adams, Economist, completed the first draft of a manuscript, "A multispecies household production analysis of a recreational fishing activity with dispositional benefits," which describes the application of household production analysis to outdoor recreation activities. The manuscript is presently undergoing outside review.

Linda L. Hudgins, Economist, completed the first empirical tests of a simultaneous industry model that describes the price and allocation behavior between the fish cannery and fresh fish market in Hawaii.

Gary L. Kamer, Statistician, and Research Assistant James C. Cooper completed compilation of a data set describing ex-vessel and wholesale fish sales in Hawaii. The data set was developed from daily transactions of individual fisherman and wholesalers and required extensive editing with the help of staff and industry members over a 1-year period. The final data set and forthcoming price indices will avoid many of the shortcomings found in the data reported through formal channels.

Papers Under Preparation for Special Symposium on Status of Resources Investigations in the Northwestern Hawaiian Islands

Richard N. Uchida, Leader, Insular Resources Task, reported that researchers in the task are preparing several papers that will be submitted to the symposium, "Status of Resources Investigations in the Northwestern

Hawaiian Islands." The symposium will be jointly sponsored by the University of Hawaii Sea Grant Program, National Marine Fisheries Service, Hawaii State Department of Land and Natural Resources, and U.S. Fish and Wildlife Service and will be held at the University of Hawaii in April.

Uchida is preparing a paper which describes the Honolulu Laboratory's studies on the distribution, catches, relative abundance, and life history aspects of the spiny lobster, Panulirus marginatus, in the Northwestern Hawaiian Islands (NWHI). Dr. Jeffrey J. Polovina, Statistician, and Research Assistant Darryl T. Tagami completed the final draft of a paper on stock assessment of the spiny lobster resource around Necker Island.

James H. Uchiyama, Fishery Biologist, is working on a paper, "Survey of pelagic fishes of the Northwestern Hawaiian Islands," which includes (1) estimates of the relative abundance of tunas and billfishes within the Fishery Conservation Zone in the NWHI and (2) estimates of the relative abundance of coastal pelagic species, particularly kawakawa, Euthynnus affinis. Also discussed in the paper are preliminary growth estimates of kawakawa, mahimahi, Coryphaena hippurus, mackerel scad, Decapterus macrosoma, and albacore, Thunnus alalunga, based on daily growth rings on otoliths. Research Assistants Jose Enitan and Jeffrey D. Sampaga are assisting Uchiyama with ring counts on kawakawa otoliths.

Research Assistant Bert K. Kikkawa is working on a paper describing the spawning and fecundity of pink snapper, Pristipomoides filamentosus, Research Assistant Victor A. Honda on the spawning and fecundity of the spiny lobster found in the NWHI primarily around Necker Island and Maro Reef, Research Assistant Robert L. Humphreys, Jr. on bottom fishing techniques and market infrastructure in the bottom fish fishery, and Reginald M. Gooding, Fishery Biologist, on bottom fishes in the NWHI.

Honda and Kikkawa were aided by Tagami on the statistical analysis of the fecundity data for pink snappers and spiny lobsters.

Meeting Held to Coordinate Northwestern Hawaiian Islands Field Work

R. Uchida met with Brian and Pattie Johnson, who will be doing some contract field work on Hawaiian monk seals, and scientists from the Hawaii Division of Fish and Game and the U.S. Fish and Wildlife Service to schedule and coordinate the various field activities planned for forthcoming cruises on the NOAA vessel Townsend Cromwell. These activities include making observations and collecting data for biological and population estimation studies on the Hawaiian monk seal, land and seabirds, nearshore fish and shellfish resources, and demersal and coastal pelagic fish resources in the NWHI.

Uchida worked with designated Chief Scientists R. Gooding, Thomas S. Hida, and Bernard M. Ito to prepare final cruise instructions (TC 80-02) and preliminary cruise instructions (TC 80-03, Parts I and II for these cruises).

Work Begun on Production Model Analysis of Bottomfish Fishery

Dr. Polovina and D. Tagami worked with Steve Ralston, a University of Washington graduate student involved in a University of Hawaii Sea Grant bottomfish project, in fitting a surplus production model to data from the Hawaiian commercial bottomfish fishery. Tagami created a new data file on tapes from deep-sea handline catch records obtained from the Hawaii Division of Fish and Game. The new data file will be used to compute indices of relative abundance for use in the production model to estimate bottomfish yields in the Hawaiian Islands.

Fecundity of Wahoo Studied

Preliminary to a study of the fecundity of wahoo, Acanthyocybium solandri, Research Assistant James H. Prescott has been studying the distribution of the various developmental stages of ovarian ova in wahoo. Prescott has been examining ova subsamples from nine locations in one lobe of the ovaries. His preliminary findings indicate a heterogeneous distribution of ova in the various developmental stages; the ova in the central-exterior part of the ovary seemed to be the most developed (Table 1). These preliminary results indicate that care should be taken in making fecundity estimates for wahoo.

Table 1.--Percent of total ova.

Sampling locality		Subsample locality	Developmental stage: Early developing	Developing	Advanced developing	Early ripe
Anterior		Exterior	44.0	56.0	--	--
		Center	49.7	49.0	1.3	--
		Lumen	52.9	42.9	4.3	--
Central		Exterior	1.9	0.5	2.4	95.2
		Center	7.3	9.9	72.5	10.3
		Lumen	17.9	2.6	74.4	5.1
Posterior		Exterior	Incomplete			
		Center	Incomplete			
		Lumen	26.8	30.6	42.6	--

Seabird Food Study Continues

Thomas S. Hida, Fishery Biologist, assisted by Young Adult Conservation Corps trainee Michael P. Seki continued work processing seabird spew samples in a study of the food habits of seabirds. The stomach samples from the larger seabirds have all been processed and Hida and Seki are now examining samples from the smaller seabirds such as petrels, terns, and shearwaters. Of interest was the spew of a few blue-gray noddies, Procelsterna cerulea, which included planktonic organisms like Halobates, copepods, tiny stomatopod larvae, and fish larvae.

* * * * * * * * * *

Research Assistant Paul M. Shiota completed the Narrative Report for Townsend Cromwell cruise 79-05, collaborated on the preparation of a manuscript with R. Uchida on current trends in the major Hawaiian fisheries, and worked with Research Assistants R. Humphreys, Jr., B. Kikkawa, and V. Honda fabricating gear and preparing for cruise TC 80-02.

* * * * * * * * * *

R. Gooding completed the draft of an internal report, "Photographic censusing of monk seals and turtles in the Northwestern Hawaiian Islands from U.S. Coast Guard C-130 aircraft." The manuscript, "Respiration rates and low oxygen tolerance limits in skipjack tuna, Katsuwonus pelamis" by Gooding, William H. Neill and Andrew E. Dizon was submitted to the Scientific Editor, NMFS for consideration for publication in the Fishery Bulletin.

Hawaiian Skipjack Tuna Landings Below Long-Term Average

The February 1980 Hawaii landings of skipjack tuna were estimated at 38.5 metric tons (MT), which is 35.6 MT below the February 1979 landings and 48.3 MT below the 1964-79 long-term average for February. The cumulative landings from January through February were estimated at 82.3 MT, which is 44.4 MT below the 1979 landings for the same period and 129.7 MT below the 1964-79 long-term average for the same period.

FISH-ENVIRONMENT INVESTIGATIONS (FEI)

Spawning Experiments on Kawakawa to Continue

In a continuation of experiments started last summer to induce artificially kawakawa, Euthynnus affinis, to spawn in captivity and produce

viable larvae under controlled and repeatable conditions, work will continue this summer to refine effective treatments and induce kawakawa and other tunas to spawn and to rear the resulting larvae. Research Assistants Sharon D. Hendrix and Thomas K. Kazama, and Michael Walker, University of Hawaii, are preparing for this work by constructing a tuna larvae hatchery at the Kewalo Research Facility. Current emphasis is on establishing food cultures for tuna larvae. Hendrix and Kazama are presently establishing phytoplankton and rotifer cultures. Walker is developing a plankton concentrating device to collect copepods at sea. He is also attempting to establish cultures of Euterpina sp., a harpacticoid copepod which is successfully being cultured at Oceanic Institute, Makapuu, Hawaii. Hendrix and Kazama are constructing tuna larvae rearing tanks and developing systems to maintain and control the temperature and quality of water in the tanks. All systems are scheduled to be in operation by early summer to coincide with the peak reproductive season of tunas in Hawaii.

Equipment Prepared for Tuna Experiments

Randolph K.C. Chang, Fishery Biologist, has been working with tuna to compare their performance in tanks of different radii and at elevated swimming speeds. A transparent acrylic plastic cover has been designed and constructed for the multichannel doughnut respirometer and was tested for gas leaks over a 9-day period. Water of low oxygen concentration was used to fill the respirometer and a modified Winkler test was used to monitor any rise in oxygen levels. A rise of 0.005 ppm O_2/h over the test period was well within the design of the experiment and the testing methodology. Chang is now awaiting a supply of skipjack tuna to test in the tank.

Chang also designed and constructed a PVC trough to measure and to implement the attachment of a sonic tag to a large tuna in the field.

Tuna Tracking Attempt Unsuccessful

Lt.(jg) Howard A. Jemison, NOAA Corps, Heeny S. H. Yuen, Fishery Biologist, Donald C. Aasted, Fishery Methods and Equipment Specialist, and T. Kazama participated in a shakedown cruise of the RV Kaahele'ale to track tuna on February 15, 1980. R. Chang was aboard the FV Buccaneer to attach a depth and temperature sensitive tag to a skipjack tuna. Poor weather and poor fishing conditions precluded successful tagging of a fish. However, aside from some unforeseen problems and shortcomings in creature comfort, the Kaahele'ale performed well. Another attempt to track a skipjack tuna is scheduled as soon as fishing conditions improve.

* * * * * * * * * *

Lt. Jemison and Timothy Tricas, University of Hawaii, collaborated on the design and construction of a dual temperature sonic transmitter that was used by Tricas in Australia to track great white sharks.

Condition of Longline-Caught Billfishes Investigated

In the development of the fishery management plan for Pacific billfishes, it is useful to have information on the condition (dead or alive when landed) of billfishes caught on longlines. Heeny Yuen, Leader, Recreational Fisheries, analyzed data from the Honolulu Laboratory's longline cruises for the condition of billfishes at the time of landing (see table below).

Species	Percent alive
Blue marlin	29
Striped marlin	54
Black marlin	26
Shortbill spearfish	32
Sailfish	18
Swordfish	40

The preliminary results indicate that the condition of blue marlin is dependent on the zone of capture and that of striped marlin on the time of year. A greater percentage of the blue marlin were alive in the area between lat. 10° N and 10° S than in latitudinal zones further north and south. Fewer striped marlin were alive during the last quarter of the year than during the other periods.

LA JOLLA LABORATORY

Coastal Fisheries Resources Division

Intensive Preparations Made for Anchovy Gonad-Egg Survey for Estimation of Spawning Biomass

Many staff members in the Coastal Fisheries Resources Division have participated this month in intensive planning sessions for the gonad/egg survey designed to estimate the anchovy spawning biomass, in addition to the usual larval index method. These include Gary Stauffer, John Hunter, Jim Thrailkill, Paul Smith, Alec MacCall and others. MacCall has developed a statistical method for sampling anchovy on deck; Stauffer and Hunter have analyzed the various parameters for gonad sampling (sex ratio, fecundity and fraction spawning), the methods to be employed and identified the statistical uncertainties; Smith, Stauffer, Thrailkill, Hunter and others have gone through the analysis of the production estimate from eggs and larvae and outlined the required procedures. Geoffrey Moser will develop and manage staging of eggs. Planning has been completed for all aspects of the cruise and it appears feasible that both estimates can be made before July 1. These surveys will provide the definitive test to the new egg/gonad survey technology. If successful, it will be one of the most accurate, timely methods available for biomass estimation. Costs are substantially less than the conventional egg and larval survey method and errors in all parameters are estimated.

Biological determinants of variation in fecundity will be studied by Hunter and associates. They will determine the number of hydrated eggs per unit dry weight occurring in anchovy females with hydrated eggs and the fat content of such fish. Fecundity is one of the most variable biological characteristics of fish populations, yet the sources of great variation in the numbers of eggs produced per spawning batch are poorly documented or unknown for natural populations. This study will identify the extent variation in batch fecundity is related to the size of eggs in the spawn (as measured by dry weight of the eggs) and to the nutritional condition of the female (fat content of the body). Both of these characters would be expected to decline seasonally as the spawning season progresses.

In addition to sampling anchovy for the estimation of spawning biomass, samples will be taken for estimation of activity of glycolytic enzymes and for an analysis of the biological determinants of variation in batch fecundity of anchovy. The enzyme work will be done by Drs. Hunter and Paul Webb, NOAA Research Associate, in cooperation with Dr. George Somero of Scripps Institution of Oceanography. Somero's work indicates that activity of fish at sea might be estimated from the relative enzyme activity. If true, this could provide a major breakthrough in estimating energy budgets for fish in the sea. Laboratory work is planned that will relate anchovy activity to enzyme activity. If these experiments are successful, then an activity level will be established in the laboratory that will simulate natural enzyme activity

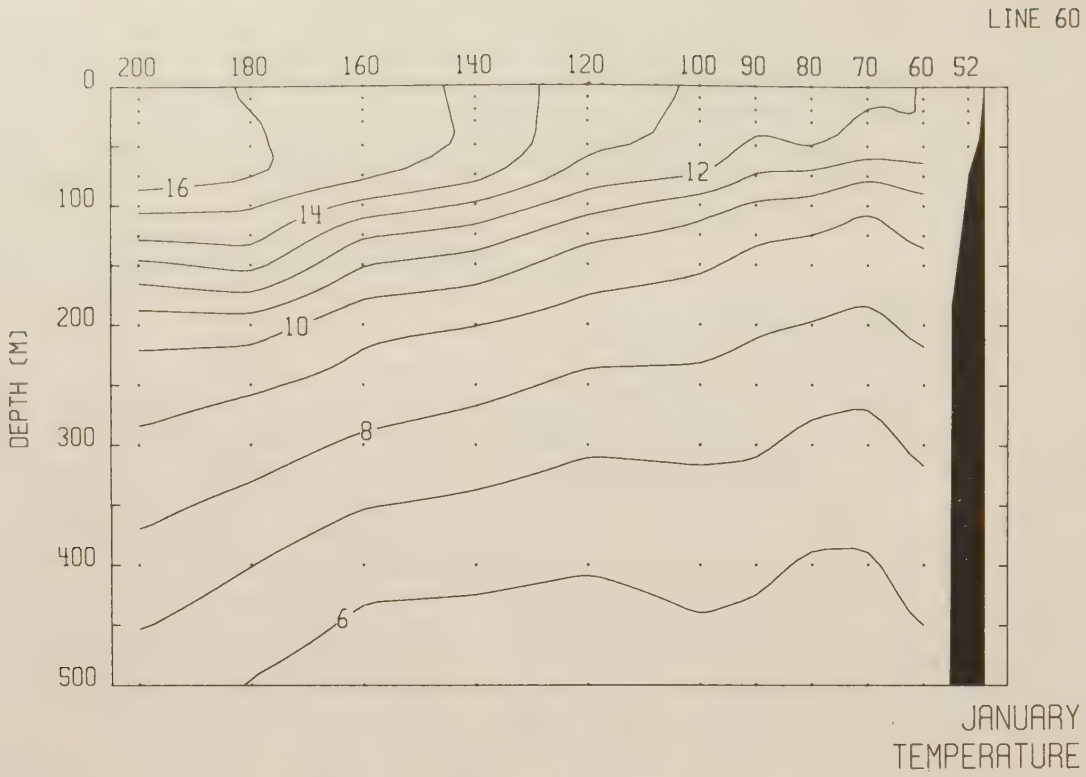
levels. In this manner, growth efficiencies and energy budgets can be calculated in the laboratory for fish under the same metabolic stress as field animals. This would be a result of major importance because no links exist at present to relate laboratory energy budgets to sea conditions. Metabolism is the principal source of error in such determinations because levels of activity in the sea are unknown and extremely difficult to measure. This approach may solve this problem.

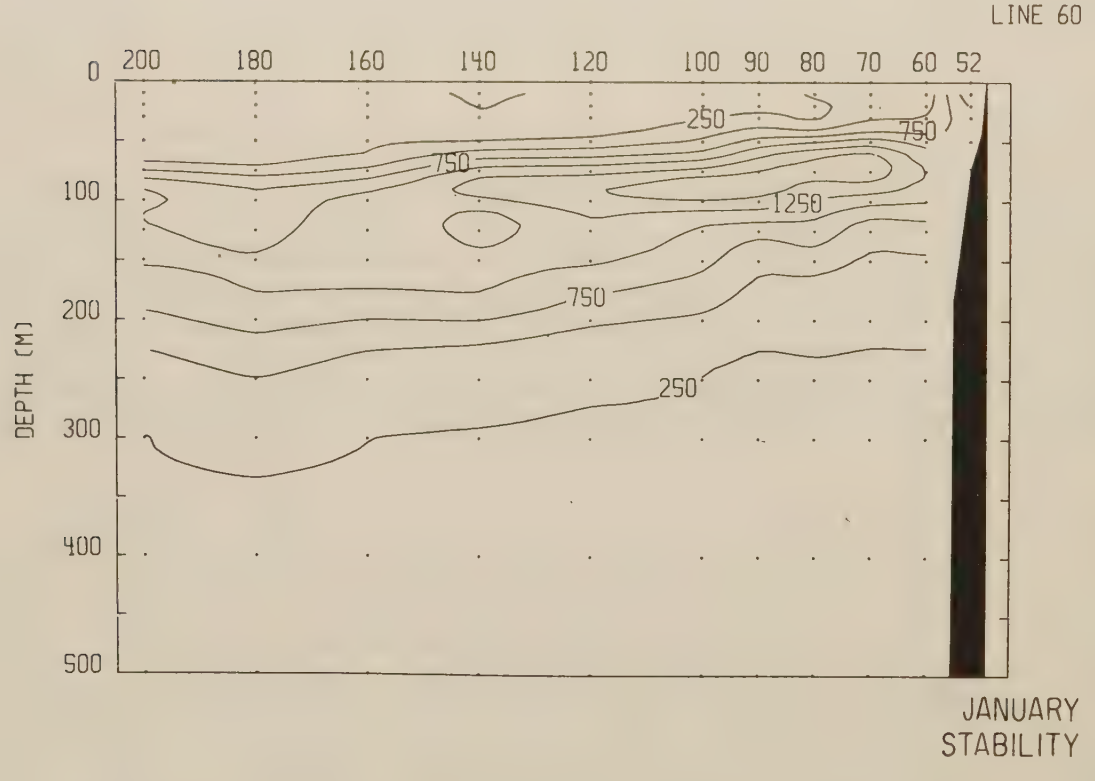
Twenty-eight Years of Hydrographic Data Prepared for CalCOFI Atlas

The first series of sections for a CalCOFI Atlas which will include mean seasonal sections of temperature, salinity, oxygen concentrations, percent oxygen saturation and density has been completed by Oceanographers R. Lynn, K. Bliss and L. Eber of the La Jolla Laboratory. The hydrographic data represented by these means was collected from 1950 through 1978 on multi-ship surveys by the National Marine Fisheries Service, Scripps Institution of Oceanography and other cooperating agencies in CalCOFI over the CalCOFI grid of hydrographic and biological stations. The CalCOFI station grid extends from San Francisco to southern Baja California and oceanographic observations have been repeated as often as monthly. The CalCOFI oceanographic data bank is the largest single file of such information in the world.

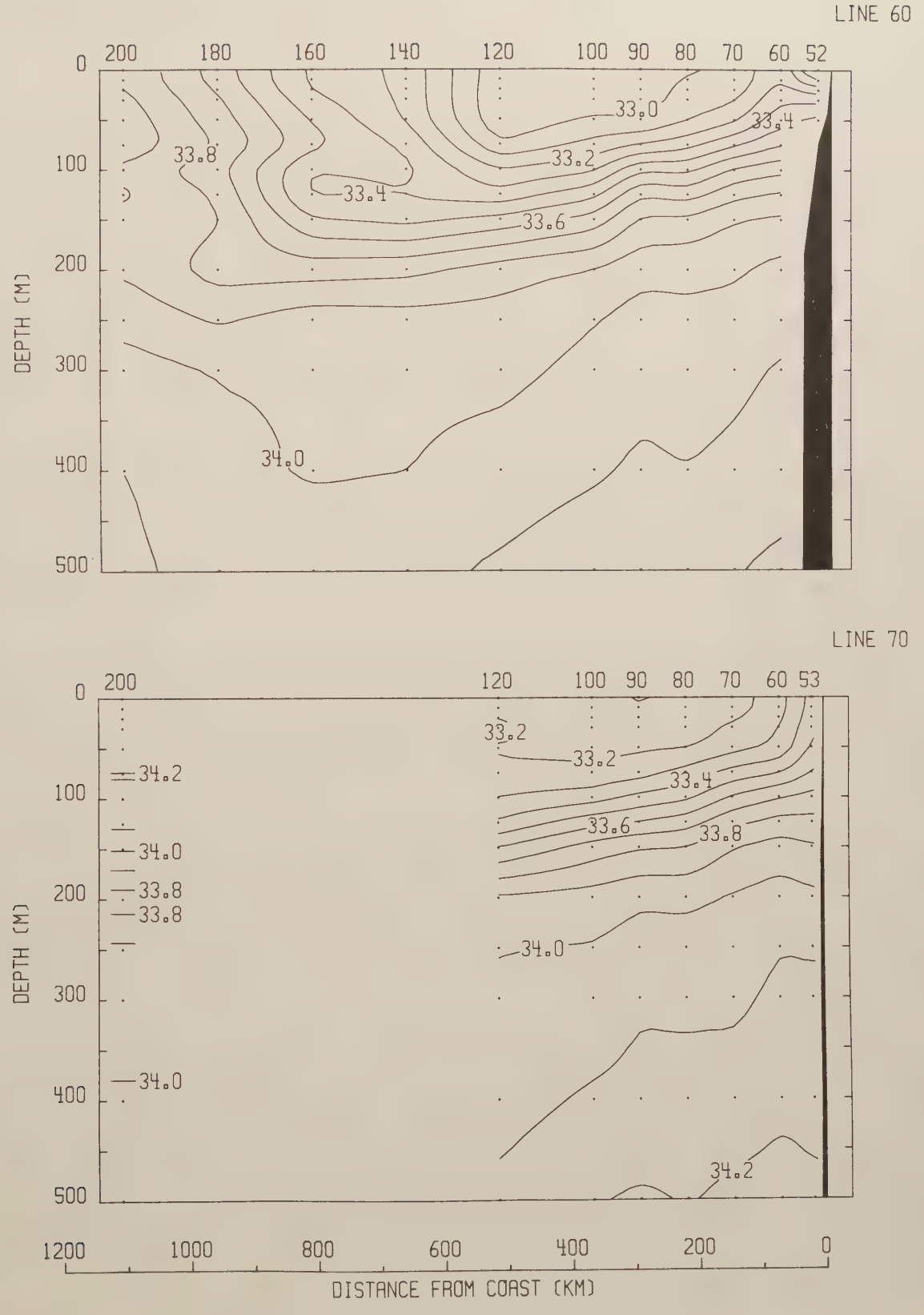
In preparing the Atlas sections, Eber completed modifications of the computer graphics to produce the charts in final form and programmed the addition of sections of hydrostatic stability and geostrophic velocity. Bliss prepared control cards to run each of the CalCOFI cardinal lines, from off San Francisco to southern Baja, California for each parameter for the winter season.

Shown in the accompanying figures are examples of sections of mean salinity and mean stability. Lines 60 and 70 are off San Francisco and Point Sur, respectively. The core of low salinity surface waters characteristic of the California Current is clearly evident. A subsurface maximum in stability shows the location, slope and intensity of the pycnocline. The Atlas will show the seasonal and spatial variations of these and other features. After review, charts for the additional seasons will be produced. Sectional plots of standard deviation about the means are being considered as well as mappings or surface of constant density.





Samples of sections of salinity, temperature, and hydrostatic stability from proposed CalCOFI Atlas. Station line 60 lies perpendicular to the California coast off Point Reyes; line 70 is off Point Sur.



JANUARY
SALINITY

SURVEY SYSTEMS DEVELOPMENT AND EVALUATION

Initial Analysis Made of Fish Associated with Northern Anchovy

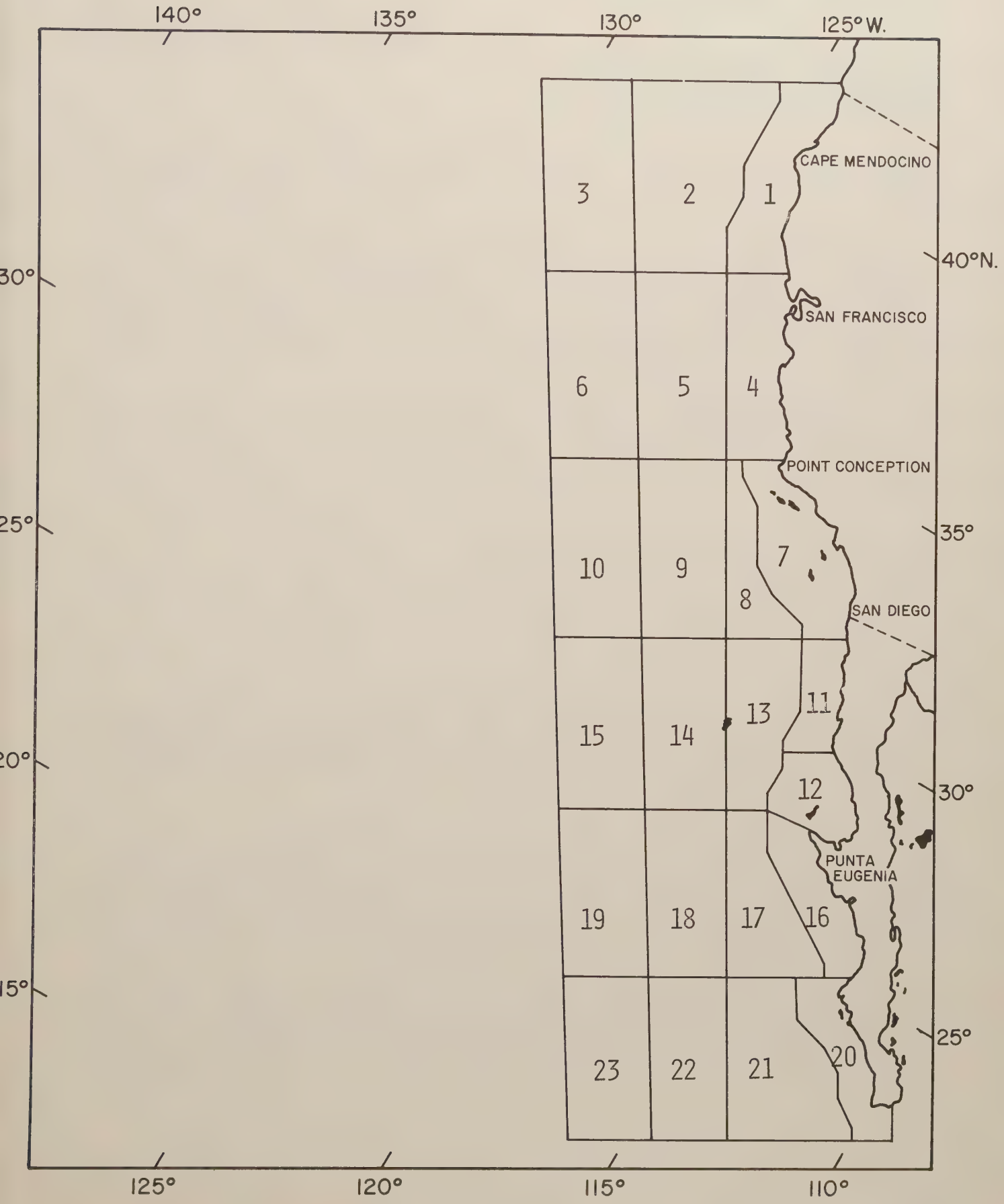
Drs. Paul E. Smith and H. Geoffrey Moser, using data compiled by Dr. Valerie Loeb, CalCOFI Data Manager Richard Charter and graduate student research aide Cynthia Haight using the MIDAS System (multispecies identifier data acquisition system) designed by Drs. Smith and Moser, have provided an initial analysis of the fish associated with the northern anchovy. One of the objectives of this work is to use the multispecies work (MIDAS) to study the variability of the recruitment of the northern anchovy. Two modes of comparison are used; indicator species and species assemblages and direct estimates of predation. In the former the species and species assemblages will be used as indicators of climatic shifts not perceptible by ordinary means. In the latter instance, the populations will be evaluated as predators controlling the survival rate.

The analysis proceeds in two phases. The first is an analysis of coincidence, the second is an analysis of abundance. Northern anchovy coincidence is evaluated by the FAGER index which evaluates how frequently one fish is in the same region and season as the northern anchovy. Of the 1979 taxa evaluated for coincidence, only 46 qualified for the comparison. Of these, 31 were species, 9 were generic groupings, and 6 were identified only to family.

The FAGER indices ranged from .39 to .91 for all taxa which were at least one-fourth as common in occurrence as northern anchovy. Of the 23 taxa with an association index value of 0.66 or higher, 9 were myctophiforms, 6 were argentinoid and stomiatoid salmoniforms, 3 were pleuronectiforms (flatfishes), 2 were perciforms and 1 each were gadiform, beryciform and scorpaeniform taxa.

Those taxa highly associated with the anchovy reflect the broad distribution of the anchovy over the CalCOFI sampling pattern, which is approximately centered in the eastern north Pacific transitional zone. Taxa with high FAGER indices generally have robust distributions within the transition zone and the fact that, with decreasing association indices, the taxa are a mixture of transitional, subarctic-transitional, subtropical and central water mass forms, reflects the zoogeographic complexity of the CalCOFI region.

Of 10 regions along the California and Baja California coastline shown on the figure on the following page, northern anchovy ranked first in abundance in 7. Abundant associates in the various regions included the genus Sebastes (rockfish) in the central California inshore region, Leuroglossus stilbius (a deep sea smelt) and Merluccius productus (Pacific hake or whiting) in the southern California inshore region. In the southern California seaward region, hake was more abundant than the second place northern anchovy and these were followed by two abundant myctophids, Stenobrachius leucopsarus and Protomyctophum crockeri. The latter fish had the highest degree of association with northern anchovy.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LARVAL FISHES, COASTAL EAST PACIFIC

Hake Larvae and Juveniles Common in Tow Samples; Abundance Greatest from San Diego to Cortez Bank

Hake larvae and juveniles were common in 6' Isaacs-Kidd Midwater Trawl (IKMT) tows taken by Richard Methot, Scripps Institution of Oceanography Graduate Student, at 28 stations in the Southern California Bight during June 1979. Mean abundance in the upper 150 m of the water column was 5.6 individuals per 100 m^2 sea surface. Abundance was greatest in the southern portion (San Diego to Cortez Bank) of the region sampled. At 20 stations, the abundance of larvae in a second tow which integrated only the upper 20 m was 68% of the abundance above 150 mm. Apparently most of the larvae were in or above the seasonal thermocline. Mean length of larvae in a sample ranged from 10-40 mm. The largest individuals were taken in the northernmost samples (Pt. Dume and Santa Cruz Island).

Ages were estimated by Methot from daily growth increments in otoliths for 99 specimens ranging in length from 8 to 38 mm. Dry weights (after alcohol preservation and otolith dissection) were determined on these specimens. These data may be summarized as follows:

# inc.	length (mm)	weight (g)
30	9	.0016
50	18	.0060
70	27	.0200
90	32	.0320

This growth rate is surprisingly rapid, Methot noted, especially since hake larvae have traditionally been considered a deep-living, slow-growing larva. Jack mackerel collected on this cruise had a similar early growth rate (30 inc. = 9.5 mm = .0020 g), but their growth accelerated rapidly after they attained a length of about 15 mm.

It is not known if this data is representative of hake larvae spawned during the peak spawning month, February. Most of the aged larvae were born in April. The data suggest that most February-born hake were 35-45 mm in length by June. This size class of juveniles showed some avoidance of the sampler and was probably most abundant north of the region sampled, according to Methot.

In conclusion, this study suggests that a program to determine the birthdate distribution of hake should focus on 25-35 mm juveniles. They are vulnerable to a 6' IKMT, they probably are still available in the CalCOFI survey region in April-May, and their otoliths can be read quickly and unambiguously.

Larval Production Models May Be Underestimated Using Dry Weights

Gross growth efficiencies of larval fish can be used to make interspecific comparisons. A high gross growth efficiency (calories of growth/calories consumed) indicates efficient assimilation of food energy for growth, with little being lost by excretion or used in respiration, thus conserving energy for swimming and feeding. Calories of growth can be estimated from daily increases in dry weight, and calories consumed can be estimated from the daily ration.

Fishery Biologist Gail Theilacker has noted previously that in many laboratories larval dry weights are being determined on preserved samples. Preservatives cause leaching of organics and salts and thus loss of weight. Larval production models that use gross growth efficiencies that were estimated with preserved dry weights will be underestimating total production.

A preliminary study made by Theilacker to intercalibrate dry weights of live and preserved larvae shows that 4-5 mm Pacific mackerel larvae (n=20) lose an average of 50% (range 37-83%) of their weight in 80% ethyl alcohol.

NOAA Research Associate Studies "Burst" Swimming in Larval Anchovy and its Role in Predation

After six months at the Southwest Fisheries Center, Dr. Paul Webb of the University of Michigan, who is the present incumbent of the NOAA/National Research Council Research Associateship, reports that his activities to date have concentrated on the physiology and behavior of larval anchovy, Engraulis mordax, with emphasis on burst swimming and its role in predation interactions.

Webb's first series of experiments have focused on fast-starts and burst performance of anchovy larvae during development in order to learn new techniques and to modify those used in freshwater for the marine situation. This work was conducted with the help of R.T. Corolla, a training intern from Southampton College, New York.

Burst swimming performance was measured for anchovy larvae, from 0.23 to 1.33 cm in total length, at a temperature of 17° C. Fast-starts and burst swimming were initiated using a 3 v cm^{-1} D.C. electric shock. Performance was measured from movie film recorded at 250 frames sec^{-1}. Nine percent of newly hatched larvae responded to the stimulus 48 h after eggs were laid, increasing to a maximum of 96% at 150 h after the eggs were laid. Distances travelled in a given time period increased linearly with length. The maximum distance traveled per burst (S) was used as a measure of endurance, and increased with length (L) according to; $S = 3.79\ L + 0.88$. Maximum speed (U_{max}) and mean speed ($\bar{U}$) similarly increased linearly with length; $U_{max} = 20.8\ L + 1.95$; $\bar{U} = 8.18\ L + 4.89$. Swimming speed and endurance together explain a large portion of size-dependent selectivity of towed plankton nets.

The logical extension of this work is a study of avoidance performance and behavior of anchovy larvae attacked by a live predator which also complements earlier work by Dr. John Hunter on the behavior and performance of the larvae as predators rather than as prey. Webb is finalizing techniques and preparing apparatus for such a study, now scheduled to begin in March 1980.

COMMERCIAL AND RECREATIONAL FISHERIES RESEARCH FOR MANAGEMENT

Development of Jack Mackerel Plan Stopped

Alec MacCall, Marine Biologist, stationed at the Southwest Fisheries Center, reports that the Pacific Fishery Management Council (PFMC) heard a summary of public and government agency comments on the draft Jack Mackerel Plan. The most significant comments was from Terry Leitzell, Assistant Administrator for Fisheries, NMFS. Leitzell wants all fishery management plans (FMPs) to explicate the benefits derived from, as compared to the costs imposed by their implementation. Throughout the process of developing the plan, the Team, Advisory Panel, and Council have repeatedly questioned the need for it. Now that Washington, D.C. has allowed the possibility of not implementing a jack mackerel FMP, the Pacific Council has decided to direct the team to cease work on the jack mackerel FMP, and to incorporate management of the northern segment of the resource in the groundfish FMP which is being developed.

Progress Continues on U.S. Vessel Construction Study

Economist Jane McMillan reports completion of a set of vessel construction cost regression equations for her analysis of fishing vessel investment in the United States. Data from the NMFS telephone survey of boatyards were divided into seven primary gear categories and into 15 subcategories. Each category was analyzed separately for the east coast, Gulf of Mexico, west coast, and for the entire United States. Five functional forms shown below were tried in this attempt to link the cost of construction with the length of the vessel.

$$Y = a\, b^{X}$$

$$Y = a\, X^{b}$$

$$Y = a + bX$$

$$Y = a + bX^{2}$$

$$Y = a + bX^{3}$$

where Y = construction cost, and X = length of vessel. a, b are parameters.

The equations which best fit each gear category for each area will be applied to length data on all vessels in order to arrive at an estimate of total value of the fleet.

Anchovy Plan to Be Re-Examined in Further Detail

The Scientific and Statistical Committee (SSC) of the Pacific Fishery Management Council has requested the Anchovy Team to examine various aspects of the anchovy resource and its management in further detail. One of the requests was to "evaluate the likelihood that the environment may generate a tendency towards other states of 'equilibrium' and consider whether or not a variety of density-dependent models may exist depending upon environmental conditions." Alec MacCall, CF&G Marine Biologist, has examined several long-term time series (e.g., anaerobic sedimentary scale deposits since 1815, tree ring widths since 1670) as indicators of possible patterns of environmental or population variation. There are clearly coherent "regimes" in these time series, but it is difficult to distinguish between systematic variation in "equilibrium" conditions from statistical effects resulting from a tendency for one year to be more like the next than like the long-term average. Serial correlation coefficients typically range from +0.2 to +0.6 (highly significant), but it is not possible to distinguish between this tendency being the cause of the observed patterns or the effect of some other type of systematic variability.

In addition to MacCall's examination of time series data, other project personnel (Huppert and McMillan) converted a stochastic simulation program to the new UCSD VAX Computer System for application to the anchovy plan re-examination. This simulation program will be used to examine several questions raised by anchovy plan reviewers. These include: (1) How does the adopted harvest policy perform if the anchovy recruitment is largely density independent? (2) How could the harvest policy be altered to account for age-structure of the population? (3) How could a harvest policy take advantage of a recruitment estimate arriving at mid-year?

During the months of March and April a report will be compiled to respond to these and other questions regarding the Anchovy Plan.

Two Measures of Catch-per-Effort Formulated for Anchovy

Doyle Hannan, CF&G Marine Biologist at the La Jolla Laboratory, has formulated two measures of catch-per-unit-effort (CPUE) for each of the seven vessels in the data base. The first is catch per day, and the second is catch per hour, based on time absent from port. The respective measures were averaged over the seven vessels to produce "fleet" CPUE time-series for the past 14 years. Catch per day shows a fairly constant level, but shows that fall CPUE tends to be higher than spring CPUE. Catch per day appears to be too insensitive to be used as an index of abundance. Catch per hour shows much more variability over the 14-year time series, and clearly shows that

fall CPUE is higher than spring CPUE. Further analysis is necessary to determine why the fall-spring difference occurs. Catch per hour shows a decline in recent years, but gives no value at all for periods when the fleet has chosen not to fish for anchovies, as was the case in the fall of 1979. A report is being prepared which will discuss these findings in more detail.

Eleventh U.S.-U.S.S.R. Cooperative Ichthyoplankton Survey Underway

The Soviet research vessel, Tikhookeanskiy, (Pacific Ocean) made its delayed port call in Long Beach on February 21 to mark the beginning of the 1980 ichthyoplankton survey of the CalCOFI area, the 11th consecutive year of such cooperative surveys. The objective of this survey is to sample fish eggs and larvae of the central subpopulation of northern anchovy and the stock of Pacific hake from which to estimate spawning biomass of the anchovy stock and to measure the relative magnitude of spawning hake.

Gary Stauffer, Jim Thrailkill, Bill Flerx, Dimitry Abramenkoff, Bob Counts (retired) and Russel Key (WWD radio operator) met with the Soviet scientists, M. Stepanenko and V. Pashchenko, aboard the Tikhookeanskiy to discuss the 1980 research plans. The 1980 cruise plan was modified from the original 45 days to about 21 days with stations deleted south of the U.S./Mexico border and stations added offshore of central California. These latter stations were added to explore the outer limits of hake distribution found on the 1979 survey. This portion of the research plan is scheduled to end on March 13 with the vessel returning to Long Beach on March 17. Flerx and Abramenkoff, Biological Technicians, will participate in the cruise. The results for Pacific hake will be transmitted to the Northwest and Alaska Fisheries Center to be included in the pre-season re-evaluation of the status of resource. The data on anchovy larvae will be included with the two 1980 Jordan surveys for making an estimate of the 1980 spawning biomass.

Following the CalCOFI cruise a second survey will be made by the Soviet vessel. This will be a 2-week venture with the objective of searching for jack mackerel concentrations particularly of the 35-50 cm size range in an area bounded by U.S./Mexico border on the south, 35° N on the north, and a line drawn through the points 33 N 120 W and 31 08 N and 118 36 W on the east. The survey will utilize acoustic, trawl and ichthyoplankton gear. The vessel may survey out beyond 200 nm, although a second Soviet vessel will conduct most of the jack mackerel research outside 200 nm. No U.S. scientists will be aboard this second leg. Plans for the third leg for months of April, May and early June off northern California, Oregon and Washington are not yet settled.

ALBACORE FISHERIES

Contract Awarded for Satellite Ocean Remote-Sensing Studies

Drs. R. Lasker and M. Laurs were awarded a small contract this month by the University of California Space Group to conduct satellite ocean remote-sensing studies related to marine fishery resources in waters off California,

using the new Scripps Satellite receiving equipment. The objectives are (1) to evaluate the utility of using ocean color and thermal imagery, and possibly satellite wind and other measurements to infer ocean turbulence and surface layer transport in year class survival studies of northern anchovy, and (2) to evaluate the feasibility of utilizing ocean color and thermal imagery to monitor the location and development of oceanic frontal boundaries that influence the distribution, availability and migration of albacore tuna in waters off California.

Margaret Wolf and Jose Hudlet-Palaez, SIO graduate students, have been hired on a part-time basis to provide technical support for this project. Each has completed a 1-week training course at the Scripps Satellite Receiving Facility. Wolf has been collecting and archiving NIMBUS 7, Coastal Zone Color Scanner passes.

Albacore Oceanography Data Processed in Record Time

Oceanographer R. Lynn reports that the processing of data obtained during the November albacore oceanography cruise has been completed in record time. K. Bliss, Oceanographer, edited and processed 123 CTD (conductivity, temperature, depth) cards. Calibration samples and O_2 data have been processed and plotted. This speed-up was made possible with the use of the microcomputer system dedicated to the CTD and the library of programs Lynn and Bliss have assembled. Analysis of the cruise data is also well underway. R. Dotson has completed contoured sections of temperature and salinity for all the transects. Bliss programmed a new interpolation listing routine to increase the efficiency of producing the sections and is now creating a program to analyze stability in the ocean. Maps of surface temperature and salinity have been prepared from the continuous thermosalinograph traces. These maps which depict a series of ocean fronts will be used in a comparative study with the satellite scanning radiometer images. Lynn acquired eight magnetic tapes of satellite passes from NESS, Redwood City, covering the survey period. He has arranged with personnel of the SIO Remote Sensing Facility for development of a reformatting program to produce new tapes compatible with their image processing programs.

Recovery of Albacore Tagged After Tetracycline Injection Will Aid in Age Determination

Dr. R.M. Laurs, Leader of the Albacore Fisheries Program, reports that recent recoveries of albacore which have been at liberty for long periods after a tetracycline injection will provide valuable data in the study of age determination by counts of ring increments on otoliths (ear bones) of albacore. The tagging portion of this work was done in 1977 and 1978 when 2,544 albacore caught off southern and central California were injected, tagged and released. A total of 136 or 5.3% of these fish have now been recaptured. Thirty five returns cannot be used because only tags were returned, tetracycline marks were not found on the otoliths, or recovery information was unknown.

In 1977 and 1978, R. Nishimoto, Fishery Biologist, and T. Foreman of the Inter-American Tropical Tuna Commission, counted otolith rings increments of 62 tetracycline injected albacore; 57 from albacore that were tagged and recovered during the same season and 5 that were at liberty for approximately one year. These counts indicated that the otolith ring increments for albacore are deposited daily. However, because most of the otoliths were from albacore that were out for less than 100 days, there is still some question as to whether the increments are formed daily over longer periods of time. Therefore, the 39 albacore that were out 1 to 2 years will prove to be very important. Recoveries from American, Canadian and Japanese fishermen in 1979 will help to determine the rate of ring formation over long periods and the great distances of migration.

Oceanic Fisheries Resources Division

MARINE MAMMAL ASSESSMENT AND MONITORING PROGRAM

Photographic Estimates of Porpoise Herd Size Show Good Correlation with Actual Counts

Lcdr. Wayne Perryman, Lt. Terry Jackson, NOAA Corps officers at the La Jolla Laboratory, and Dr. Rennie Holt of the La Jolla Laboratory, together with personnel from the Inter-American Tropical Tuna Commission (IATTC), used Variscan projectors at the NASA facility, Bay St. Louis, Mississippi to count porpoise in schools photographed from a helicopter during the IATTC/NMFS cruise aboard the tuna seiner, Gina Anne. The counts from the photographs were compared with independent counts made on the same schools, which were captured and counted during backdown release. The counts were found to be very similar, indicating that aerial photographs are useful for estimating school size of porpoise.

The clarity of the image from the high resolution aerial reconnaissance camera used in the experiment was such that animal lengths could also be measured from the photographs. This is a significant finding since it has a potential of allowing researchers to estimate the size composition of dolphin schools without capturing the school and measuring each animal. Further development of this tool is being pursued.

Potential Aircraft Evaluated for Aerial Survey

Lt. T. Jackson and Lcdr. W. Perryman traveled to NOAA's Research Flight Facility (RFF) in Miami, Florida February 4-6 to inspect and assess two potential aircrafts, the C-130 Hercules and the P-3 Orion, for use in future porpoise aerial surveys. Information collected indicates that the C-130 could possibly be used as an effective platform for an offshore survey, whereas the P-3 does not appear to be suitable for a porpoise aerial survey. An important feature of the C-130 which makes it suitable is its range and speed. The C-130 is capable of operating in the extreme western part of the distributional

range of the dolphin stocks involved in the eastern Pacific purse seine fishery and capable of operating at a speed of about 120-130 kts., which is about the maximum speed for making aerial observations of dolphins.

Porpoise Survey Cruise Continues

The NOAA research vessels, David Starr Jordan and the Townsend Cromwell, proceeded on schedule to the final leg of a porpoise survey cruise in the eastern tropicial Pacific. Dr. David Au, Chief Scientist aboard the Jordan, is directing the cruise. The primary objective of the survey is to measure porpoise density gradients within the eastern tropical Pacific. Thus far sighting conditions have been less than favorable due to the number of storms that have been encountered in the survey area. However, porpoise schools have been sighted and valuable data are being collected. The survey is expected to end in early March.

Assessment Made of Potential Computer Services

Dr. Tim Smith, who is the Leader of the Marine Mammal Assessment Program at the La Jolla Laboratory, participated in assessing the feasibility of using the computer system of ADP Network Services. Bruce Wahlen, Statistician, conducted a similar review of the NOAA Telephone Processing System. In addition, Joseph Caruso and Ken Wallace reported that programs concerning the verification of the existing life history programs and programs concerning evaluation of fishing effort by sea state had been completed in the month of February. Frank Ralston, Computer Specialist, reported that all of the editing programs for the 1980 cruises had been completed.

Population Dynamacist is New Member of Marine Mammal Assessment & Monitoring Staff

Dr. Douglas DeMaster joined the staff this month as a new member of the Marine Mammal Assessment and Monitoring Program. DeMaster will be working with Dr. Tim Smith, Program Leader, and will be initially investigating various approaches to quantifying reproductive parameters of dolphins. This investigation hopefully will produce a general model that is applicable for other marine mammal species.

DeMaster received a B.S. from the University of Wisconsin, Madison before going on for a Ph.D. at the University of Minnesota, Minneapolis. His doctoral research was on the population dynamics of the Weddell seal in McMurdo Sound, Antarctica and was completed under Dr. Donald B. Scinff. After graduation in 1978, DeMaster joined the U.S. Fish and Wildlife Service and directed the polar bear/walrus project of the National Fish and Wildlife Lab before coming to the SWFC.

Dr. Doug DeMaster during studies of Weddell seals on fast ice at McMurdo Sound, Antarctica.

MARINE MAMMAL BIOLOGY & TECHNOLOGY PROGRAM

NOAA Divers Participate in Training Course

Dave Holts, Fishery Methods and Equipment Specialist, and Tom Shay, Biological Technician, both certified NOAA divers, participated in diver training courses held at NOAA's Atlantic Marine Center, Norfolk, Virginia from February 18-22. The course attended by Shay stressed diving operations and familiarization with innovations in diving equipment, including unisuits, underwater television, and communication systems. Such equipment was used by participants during underwater navigation and search and recovery operations. Holts, who is the Center's diving coordinator, also participated in a divemaster's course, designed to provide instruction in safely conducting and supervising a NOAA diving operation. The training is part of the Division's ongoing efforts to maintain a core of qualified divers who are able to execute safely and effectively experiments requiring underwater observations.

Staff Prepares Testimony for Forthcoming Hearings on Porpoise Regulations

Several staff members of the Marine Mammal Biology and Technology Program and Marine Mammal Assessment and Monitoring Program at the La Jolla Laboratory are preparing material for the hearings before Administrative Law Judge Hugh Dolan on proposed amendments to regulations governing incidental take of marine mammals during commercial tuna fishing operations. The hearings will begin on March 31 in San Diego. The proposed regulations are scheduled to become effective in mid-1980 and would govern incidental marine mammal take through 1981. The proposed amendments to the regulations include the following:

1. The northern offshore spotted dolphin, Stenella attenuata and the eastern spinner dolphin, S. longirostris would be designated as depleted, prompting prohibition of any take from these stocks.

2. Quotas for those stocks with an allowable take would be established based upon the population status and reproductive ability of each stock to withstand some incidental mortality. This procedure differs from methods heretofore used, which have parceled an aggregate total to various stocks based upon stock's (historical) contribution to the total mortality. Furthermore, the total allowable kill, now determined according to technological feasibility, would be determined according to biological considerations.

3. Sets on porpoise could not be initiated during the 1-1/2 hours prior to sunset.

4. Other proposed amendments would affect deployment of speedboats during a set, net inspections by NMFS specialists, following gear modifications, and procedures for pulling bow bunches.

The hearings are scheduled to be conducted in San Diego for 2 weeks during which time individuals, from both NMFS as well as several other organizations, will present testimony. The proceedings will then continue in Washington, D.C.

Marine Mammal Conference Convenes in Mexico

The Fifth International Conference on the Marine Mammals of Baja California convened February 20-21 in Ensenada, Mexico. William Perrin, Fishery Biologist, attended as the representative of the Southwest Fisheries Center. Although many of the scheduled speakers were unable to attend due to flood-induced transportation problems in Mexico, the conference was nevertheless well attended, particularly by Mexican students, and several interesting papers were presented.

Blood Sampling of Captive Hawaiian Spinner Dolphins Completed

A six-month contract with Sea Life Park, Oahu for regularly submitting blood samples of their Hawaiian spinner dolphins, Stenella longirostris, has concluded, and Warren Stuntz, Fishery Biologist, has begun to analyze the blood chemistry data. Stuntz hopes the samples will provide baseline estimates for several blood serum constituents against which he can compare samples collected from animals which have been chased during tuna seining operations. His analyses may also prove useful to Sea Life Park, as two animals being sampled died during the study (from causes unrelated to blood sampling) and the blood analyses may detect anomalous blood chemistry prior to death.

TUNA AND BILLFISH RESOURCES PROGRAM

Meeting Held to Discuss U.S. Contribution to 1980 ICCAT Research

The Southeast Fisheries Center, Miami, Florida, was the scene of a February 12, 1980 meeting to discuss United States research in preparation for the International Commission for the Conservation of Atlantic Tunas (ICCAT) meeting in November 1980. Attending the meeting from the La Jolla Laboratory were Gary Sakagawa, Chief, Oceanic Fisheries Resources Division, who chaired the meeting, and Wes Parks, Leader, Tuna/Billfish Resources Program. Attending from the Miami Laboratory were Grant Beardsley, Ray Conser, Scott Nichols, Mike Parrick, and Bill Richards. The meeting focused on a review of recommendations of the 1979 ICCAT meeting and planned research being conducted to address them. A report of the meeting is in preparation for submission to Carmen Blondin, U.S. Commissioner to ICCAT.

Skipjack Tuna Tagging Operations Continue in the Caribbean

The NMFS chartered baitboat, Rhonda Sue, departed San Diego January 11 and arrived in Ponce, Puerto Rico, February 4. After a three-day delay due to bad weather, tagging began in Puerto Rican waters.

During the week of February 11, tuna schools encountered between Puerto Rico and Guadalupe did not respond well to chumming. Tuna congregating about the vessel showed no interst either in sardines or thread herring, the bait most commonly used in chumming.

Fishing improved during the second week as the Rhonda Sue fished off St. Vincent. Tuna were more responsive in this area which may be related to a shallower thermocline (300 feet in depth in northern areas, 60 feet in southern).

By February 27, the Rhonda Sue had reached waters off Central Surinam, expected to be the most southern area of operation. By this date a total of 68 tuna schools had been sighted (25 skipjack, 10 blackfin, 3 mixed blackfin and skipjack, 24 other and 6 unidentified) and 199 fish had been tagged (185 skipjack, 9 blackfin and 5 other). The cruise is continuing and is planned to end in April.

Preliminary Estimates of U.S. Atlantic Tuna Catch Assembled

Preliminary estimates of the 1979 catch of Atlantic tunas caught by American tuna purse seiners have been assembled by Al Coan, Mathematician, at the La Jolla Laboratory. The estimates have been summarized according to ocean regions and are shown in the table below. The total catch for the purse seiners was 53% lower in 1979 than in 1978 primarily owing to reduced fishing effort.

TOTAL CATCH (METRIC TONS) BY SPECIES

ean Region	Yellowfin	Skipjack	Bigeye	Little Tunny	Albacore	Bluefin	Total	Number of vessels
stern Atlantic	2,884	2,073	212	3	11	-	5,183	7
d-western Atlantic	283	737	-	-	-	-	1,020	6
rthwest Atlantic	-	-	-	-	-	1,425	1,425	4
Total	3,167	2,810	212	3	11	1,425	7,628	13[1]

[1] ne vessels that fished the eastern Atlantic also fished the mid-western Atlantic so the total is not the sum of the ssels in the two areas.

Puerto Rico Tuna Sampling Continues; Samples Processed for Submission to ICCAT

The 1979 catch of non-U.S.-caught Atlantic tunas transshipped to Puerto Rico was sampled by Eugene P. Holzapfel, Biological Technician, at Mayaguez, Puerto Rico. Length frequency samples were collected from purse seine, baitboat, and longline transshipments. The total number of samples collected in 1979 is 3887 yellowfin, 2181 skipjack, 1629 bigeye, and 220 albacore. The samples are being processed for submission to the International Commission for the Conservation of Atlantic Tunas in early March 1980.

Incidental Catch of Swordfish in Shark Gillnet Fishery to be Investigated

Wes Parks, Leader of the Tuna Resources Program, and Jim Squire, Fishery Biologist, attended the San Diego meeting of the Recreatinal Fisheries Subcommittee of the Marine Fisheries Advisory Committee (MAFAC). At the request of Herb Kameon, Subcommittee Chairman, Squire, who is Chairman of the Pacific Fishery Management Council's Billfish and Shark Fishery Management

Plan Development Team, reviewed progress on development of the plan. Squire noted that additional work is being undertaken by the Plan Development Team to describe a rapidly growing shark gillnet fishery off the California coast. The shark gillnet fishery, in which swordfish is an incidental catch, is increasing in size, and background information on the fishery is required for the plan. Landings of oceanic shark in California have increased from about one-half million pounds in 1975 and earlier to three million pounds in 1977.

Tropical Tuna Fishermen Participate in Evaluation of Data Distribution System

Eleven San Diego based purse seiners are currently participating in an evaluation of the SEASAT-A Data Distribution System (SDDS). The SDDS, a joint undertaking of the Jet Propulsion Laboratory (JPL), Pasadena and the National Aeronautical and Space Administration (NASA), was initially designed to disseminate environmental data derived from the SEASAT-A satellite to a number of end users including tuna fishermen in the eastern Pacific. The failure of the SEASAT-A satellite in October of 1978 was a blow to the program but JPL and NASA decided to go ahead with an evaluation of the data system itself utilizing environmental products produced by the U.S Navy's Fleet Numerical Oceanography Center (FNOC) Monterey, California.

Currently, FNOC environmental products are being made available to the cooperating vessels via radio station WWD through the SDDS. They are then transmitted by radio facsimile to cooperating fishing vessels on a daily basis for their use and for evaluation of the product and the system.

Coordination of the system evaluation for the tropical tuna fishery is being conducted by Oceanographer Richard Evans of the La Jolla Laboratory under a contract from JPL.

Tuna Vessel Participation in FAX Advisory Program Continues

During January 1980, 22 tuna seiners contributed synoptic weather data to the NMFS FAX advisory program at the La Jolla Laboratory. A total of 160 weather observations were reported through NMFS-licensed radio station WWD. The table below compares program participation during January 1979 and 1980.

	January 1979	January 1980
Number of vessels with equipment	49	44
Number of vessels	21	22
Number of weather observations reported	136	160
Number of XBT observations reported	0	0
Total Observations	136	160

TIBURON LABORATORY

FISH COMMUNITIES INVESTIGATION

Rockfish Maturity Schedules Under Study

Tina Echeverria, Fishery Biologist on the Rockfish Analysis Task, devoted much of the month in preparation for a short-term project that will lead to a better understanding of rockfish maturity schedules. Since the age of maturity often has been shown to decrease when a fish stock has been heavily fished, the Groundfish Management Plan Development Team of the Pacific Fishery Management Council recommended that age of maturity be one of the factors monitored for indications of stress caused by fishing. The project is designed to develop baseline data on rockfish maturity schedules and to provide guidelines for design of future monitoring of maturity schedules. Commercial and recreational landings will be sampled at major ports between Morro Bay and the Oregon border. Viscera from the sampled fish will be sent to the Tiburon Laboratory for maturity determinations. In addition to the maturity study, the work will supplement catch composition sampling of rockfish being conducted by California Department of Fish and Game personnel. Also, material will be collected to determine the feasibility of using predator stomach contents as indices of recruitment strength for important California fish stocks.

Workshop Considers Remote Sensing Device for Fisheries Studies

The staff of the Tiburon Laboratory's Predator-Prey Task, recognizing a need for direct observations of the deeper water fishes in their natural surroundings, was represented by Fishery Biologist Tony Chess at a workshop in Bay St. Louis, Mississippi, that examined the status of RUFAS II, a remotely controlled television and photographic monitoring system. The workshop was intended primarily to discuss the need for such a system, and if so whether it would be more feasible to upgrade the existing RUFAS II system, or to build a new system. There was consensus that a remotely controlled television and photographic monitoring system would be valuable for a variety of research activities, and that it would be more practical to upgrade the current RUFAS II system than to develop a new one. If the improved RUFAS II system proves effective, it will serve as the basis for a system with still greater capabilities. When available, hopefully within a year, the improved RUFAS II will be used in conjunction with other sampling procedures aboard the NOAA research vessel Jordan to investigate distribution patterns of fishes on the continental shelf of central and northern California.

Habits of an Unusual Marine Insect Clarified

Samples of organisms that rise from the seafloor into the water column, trapped last year at Enewetak Atoll, Marshall Islands, by Dr. Edmund Hobson, Leader of the Fish Communities Investigation, and Fishery Biologist Tony Chess, included the unusual and rarely seen marine midge, Pontomyia natans. This tiny, flightless insect, currently under study by Fishery Biologist Susan Smith, belongs to a genus of exclusively marine chironomids (of which there are four described species). The time and location of the Enewetak collections suggest that these insects emerge from a particular substrate at night, and at a particular point in the tidal cycle. Fifty-three individuals (adult males, adult females and pupa) were taken in two emergence traps set in 3 m of water over an algae-gravel substrate on the night of 2-3 June 1979. Apparently the insects were captured as they emerged from the lagoon floor to mate and to shed their puparia. Perhaps significantly, the collection-night coincided with the first-quarter neap tide, when the range of the tide is minimal. Furthermore, the nighttime ebb on that particular date was higher than on any night for two weeks before or after. Although the traps were reset and left in the same positions throughout the following day, no Pontomyia were taken; nor were any taken in traps set day or night over other substrates (coral-rich, coral rubble, and sand), including those set during neap tides.

Studies of the Rockfish Analysis Task Described in Talks by Task Leader

Dr. William H. Lenarz, Leader of the Rockfish Analysis Task, prepared and presented two scientific talks during February. On February 7, he presented a talk on "Shortbelly rockfish, Sebastes jordani: a large unfished resource in waters off California" to the CAL-NEVA Chapter of the American Fisheries Society at its annual meeting in Redding, California. The talk included material on the species' ecology, movements, and potential for a fishery. On February 27, he presented a talk, "Comparative Rockfishology" at the Southwest Fisheries Center, La Jolla. This talk presented work being conducted on relationships among morphology, feeding behavior, reproductive strategies, and the ability of rockfish species to sustain fisheries.

FISHERIES DEVELOPMENT INVESTIGATION

Groundfish Trawls to be Used in Fisheries Development are Received

The experimental trawls built by Nor'Eastern Trawl System consisting of a Polish rope-wing midwater trawl, Spanish semi-pelagic trawl, and a plankton midwater trawl were delivered this month. The trawls will be used in the work on developing fisheries for shortbelly rockfish, Pacific sanddabs, and euphausiids.

Shipment of Fish Made to Prospective Users in Japan

On February 13, 1980, Lt. Patrick Rutten, NOAA Corps Officer assigned to the Tiburon Laboratory, again made a shipment of fish to prospective users in Japan. The shipment consisted of 50 pounds of frozen shortbelly rockish, 20 pounds of frozen salted squid, and 20 pounds of live rock crabs. The crabs were dead upon receipt owing to a delay in shipment, but the other items were received in good shape. Preliminary reports indicate that a market is available for shortbelly rockfish. The prospective buyer will visit Tiburon in early March to discuss details of future sales of shortbelly rockfish.

Draft Proposal for Saltonsall-Kennedy Funds Circulated for Comment

A draft proposal for Saltonstall-Kennedy funds was completed by Sus Kato, Chief of the Investigation, and sent to various fishermen, processors, and agencies for comment. The proposed project is essentially an enlargement of the Fisheries Development Task, permitting a speed up of the timetable on various aspects of the work at the Tiburon Laboratory which are progressing slowly, or are presently on "hold."

Cruise Schedule Altered for Research Vessel Oregon

The cruise schedule for the NOAA research vessel Oregon cruise, which has been assigned to the Tiburon Laboratory from March 4 to April 15 has been altered. The staff of the Fisheries Development Investigation now have just three days of ship time, so their efforts will be concentrated on catching and processing euphausiids. Fishery Biologist Daniel Ralph, who is in charge of the euphausiid project, will serve as Cruise Leader. Shortbelly rockfish, required for market development efforts at Tiburon, will be provided by Dr. William H. Lenarz and Tony Chess during their cruise period.

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At the request of Bob Price, Seafood Technology Specialist with Sea Grant, University of California, Davis, 100 pounds of small flatfish was processed through the Yanagiya deboning machine at the Laboratory. The minced flesh was used in a project funded by the California Seafood Institute.

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Fishery Biologist Roger Green is preparing a manuscript on salmon. Completed are sections on discussion of saltwater pen-rearing, pen-rearing environment at Tiburon, net-pen enclosure design and construction, general pen-rearing and tagging procedures, and narrative describing pen-rearing experiences in 1974 and 1975.

PHYSIOLOGICAL ECOLOGY INVESTIGATION

Annual Striped Bass Research Meeting held at Tiburon Laboratory

The annual Striped Bass Research Meeting was held at the Tiburon Laboratory on February 14, 1980. Attending were representatives from the University of California, Davis; the University of California, Berkeley; San Francisco State University; California Department of Fish and Game; California State Water Resources Control Board and the NMFS-Tiburon Laboratory. The purpose of the meeting was to discuss briefly last year's research results on the striped bass, to outline this year's efforts, and to coordinate cooperative activities as much as possible.

Pollution Physiology Research

Dr. Jeannette Whipple, Investigations Leader, reported that tissues from last year's adult spawner sampling continue to be analyzed for pesticide content and, as in 1978, biologists are finding petrochemical hydrocarbons, heavy metals, and PCBs. Because of the persistent presence of these contaminants, the California State Water Resources Control Board and NMFS will cooperatively expand the sampling of juvenile and adult striped bass this year. Whipple said her group plans to take fish during all four seasons from throughout the range of the Pacific population. This will permit determination of the extent of severity of the pollutant loads and to assess the physiological condition of the population. The early life stage studies are also changing research direction. After five years of laboratory oriented experimentation, plans are to carry the project to the field. Rearing experiments, similar to those conducted in the laboratory, will be run in the spawning and nursery areas of the striped bass. Further plans are to incubate and rear larvae aboard a moveable platform which will follow the normal migratory route down the river into the estuary. The general objectives are to field test the laboratory-derived hypotheses which pertain to survival and growth from fertilization to metamorphosis.

SOUTHWEST REGIONAL DATA MANAGEMENT AND ADP OPERATIONS

Coastwide Summary Data Base Management System Completed

For some years the Pacific states and NMFS have been working toward coastwide coordination and consolidation of fisheries data. With policy guidance from a Coastwide Data Task Force, representatives of State and Federal fisheries agencies have made significant progress toward consensus on data elements required for a Coastwide Data File, and agreements were reached this month concerning format and mechanics for data submission and processing according to Fred Kellenberger, Data Systems Manager. California, Oregon and Washington agreed that they had the capability and would develop separate files for calendar years 1974, 1975 and 1976. The job of coordinating this effort was given to the Pacific Marine Fisheries Commission (PMFC) with funds from NMFS.

In September 1978 the PMFC published the Coastwide Data File Input/Output Specifications. Each state was required to generate compatible tapes as specified in the PMFC document. PMFC also established uniform codes for gear type, species and ports which would appear on the Coastwide Data Files. Because of confidentiality requirements in California, responsibility for the final merging of the data files was transferred to the Southwest Fisheries Center. At the SWFC, computer programs were written to edit the states' data, convert the codes and merge the data into coastwide files. These merged files were then summarized and output to an on-line (on required) Coastwide Summary Data Base. These files reside at the Southwest Fisheries Center in La Jolla where they can be accessed by any user that satisfies proper confidentiality and security requirements.

The Coastwide Data System has been created for 1974, 1975 and 1976 data from California, Oregon and Washington. The system consists of merged vessel files for each year, merged landings files for each year, a vessel data base and 6 landings data bases. The vessel data base contains one record for each vessel registered during the 3 year period in one or more states. The vessel data base contains the length, weight, horsepower, gear type, registration number, and state code. The six landings data bases contain catch data summarized by week, port, gear, species and vessel. The landings data base consists of the date of the first and last landings made that week, the number of landings, the number of pounds caught and the average price per pound for the week. There are two landings data bases for each year, one containing only salmon catch data while the other contains all other species.

The merging of the states' data (over 3 million records) was accomplished on the UCSD Burrough's 7800 while the data bases (about 1.5 million records) were created on CSC INFONET.

Report II (developed by the INFONET Division of Computer Sciences Corporation) can be used to produce reports from information contained in the data bases. Report II has English-like commands which allows non-programmers

to access the system. As an example, it would take two lines of Report II code to determine the number of pounds caught by out-of-state vessels.

Other Data Management Activities

On February 6, the ADP Requirement Study Report, revised by Chuck Oliver, Porpoise Data Manager, Richard Charter, CalCOFI Data Manager and Dorothy Roll, Computer Systems Analyst, was submitted to the other members of the SWFC Data Management Committee for their review and comments. The other members are Al Coan, (La Jolla), Jim Zweifel (La Jolla), George Liao (Honolulu), Nancy Wiley (Tiburon), Doug McLain (Monterey), and Jim Bybee (SWR). Comments from these members were received and all suggestions have been integrated in the second revision. This revised document will be submitted the first week of March to the SWFC and SWR directors, the laboratory directors and division chiefs for their review and final approval. Upon their acceptance the document will be sent to NOAA, DOC and GSA.

* * * * * * * * * *

Oden Burris, Computer Programmer, continues maintenance of the Financial Reporting System (FRS) for the SWFC and the Southwest Region. Burris is in the process of solving two major problems: 1) the understatement of costs for reimbursable tasks that incur labor costs and 2) the dropping of a minus sign "-" when the year to date commitments by task information is summed in both the TDP report and the Center report.

Robert Butler, Computer Programmer, is reviewing the Pacific Area Cooperative Enforcement System (PACES) in order to start the operation of the system in March. PACES is a cooperative enforcement information system among the SWR, SWFC and California Fish and Game. Butler is organizing all the computer programs necessary for creating the 7 data base files and developing command files for implementing the system. He will draft a data flow diagram of the system by charting the source of information, file interactions and people interactions.

A contract has been issued to General Services Administration (GSA) for a Coastwide System Study. The system study will examine which computer system should be utilized for the aggregation of coastwide data for FCMA activities. The contract is being funded by the SWFC and NWR. The main goals of the system study is to (1) define state and federal fishery information systems and access to data required for aggregation (2) develop system requirements to provide aggregated data for use in FCMA management decision making and (3) develop hardware and software alternatives to meet user requirements.

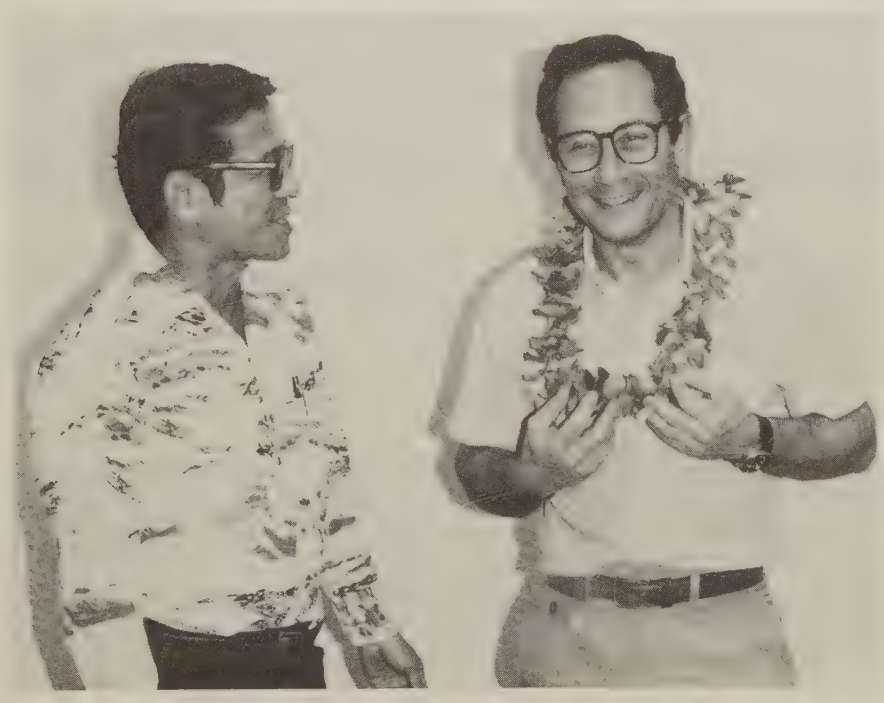
MISCELLANEOUS

Honolulu Laboratory Honored by Visit of NOAA Administrator Frank

NOAA Administrator Richard A. Frank visited the Honolulu Laboratory on February 15 to get acquainted with the staff and to be briefed on the Laboratory's research programs. Frank and other dignitaries from the Department of Commerce were in Hawaii to attend the Pacific Basin Development Conference, which was held during the week of February 17 at the Kuilima Hotel on Oahu's north shore.

Frank said a few words at a brief general staff meeting and was later provided a briefing on the Laboratory's research program by R. Shomura, A. Dizon, R. Uchida, and M.L. Godfrey. Also at the briefing were Terry Leitzell, Assistant Administrator for Fisheries, Martha Blaxall, Director, Office of Utilization and Development, Center Director I. Barrett, SWR Director G. Howard, and Special Assistant to Frank, James Wolf.

The Honolulu Laboratory made part of the arrangements for Mr. Frank to visit other NOAA, NOAA-related and cooperating agencies during his stay in Hawaii. He met with President Fujio Matsuda and Chancellor Durward Long, Manoa Campus of the University of Hawaii, officials of University of Hawaii Sea Grant, Hawaii State Legislators, and members of the Western Pacific Regional Fishery Management Council.



Honolulu Lab Dir. Shomura welcomes NOAA Administrator Frank to the Honolulu Laboratory at the general staff meeting.

Gerry Howard, Iz Barrett, Dick Frank, Terry Leitzell, and Martha Blaxall listen attentively during the research program briefing at the Honolulu Laboratory.

NMFS Film on Porpoise Safety Gear Completed

A NMFS film entitled, "Tuna Seining and Porpoise Safety," produced by the Tuna/Porpoise Management Branch of NMFS, assisted by Fordel Films, Inc., both of San Diego, California, was completed in the fall of 1979. The film focuses on porpoise safety gear and procedures designed to reduce incidental mortality of marine mammals during fishing operations. The 16 mm narrative film shows a complete tuna purse seine set sequence and runs for 23 minutes.

Among the credit lines are contributions by Kenneth Raymond for Illustration and Animation, Roy Allen for Titles and Backgrounds and Eric Barham for Aerial Photography, all of the Southwest Fisheries Center.

The film features Captain Ralph Silva and his crewmen aboard the tuna seiner, Queen Mary.

Black History Month Observed at Center

In observance of Black History Month throughout the U.S., the Equal Employment Opportunity Committee of the Southwest Fisheries Center sponsored Wendell Bass, Jr. who presented a lecture entitled, "Roots: A vehicle for Understanding Black History." Bass, a Ph.D. candidate at the University of Kansas and a teacher in the San Diego City Schools, has conducted extensive research in tracing his ancestral heritage. During the seminar, Bass described the historical struggle of black Americans, as well as some of the problems of blacks in America today.

Wendell Bass, Jr. shows Hillary Herring-Dyal, Fishery Biologist who arranged his visit, some literature on black history.

SEMINARS

La Jolla Laboratory

February 5 - Dr. Paul W. Webb, Associate Professor of Natural Resources, University of Michigan and National Research Council/NOAA Post-Doctoral Research Associate at the Southwest Fisheries Center, 1979-80 discussed, "Problems of measuring sublethal stress of fish."

21 - Arranged by Dr. Michael Laurs, a panel of experts discussed findings made on the 1979 albacore physiology cruise: Dr. Jeffrey Graham of the Scripps Institution of Oceanography Physiological Research Laboratory spoke on, "Albacore thermoregulation studies; Dr. Kathy Dickson, also of the SIO group, discussed, "Albacore enzymology related to thermo-regulation. From the University of California, San Diego School of Medicine, Dr. Frank White talked about "Cardiac function and regional blood flow in albacore; Mary Garritsen presented a talk on "Prostaglandins measurements in albacore, and Dr. Ray Kelly discussed, "Albacore karyotyping. Dr. Jack Hegenaur of the UCSD Department of Biology talked about "Hemoglobin and iron utilization studies in albacore." Dr. Laurs who is the leader of the Albacore Fisheries program at the La Jolla Laboratory, discussed, "Acoustic tracking study of albacore swimming depth and water temperature."

26 - Dr. William H. Lenarz of the Southwest Fisheries Center, presented a talk entitled, "Comparative rockfishology."

Tiburon Laboratory

February 27 - The eighth joint seminar with San Francisco State University/Tiburon Laboratory was held at the Tiburon Center for Environmental Studies (San Francisco State University). The seminar was presented by Curtiss O. Davis, Tiburon Center for Environmental Studies, and entitled, "Dynamics of Phytoplankton Populations in Controlled Experimental Ecosystems."

TRAINING

February 11-13 - Norman Abramson (Tiburon), Iz Barrett, John Carr, Ben Remington, Reuben Lasker, David Mackętt, and Fred Kellenberger (La Jolla) - Principles of Management for the Research and Technical Manager, Battelle Seminars and Studies Program, Los Angeles.

12-14 - Pete E. Benville, Jr. - 5880 Operator Training, Hewlett-Packard, Santa Clara, CA.

PUBLIC AFFAIRS

Honolulu Laboratory

- R. Gooding served as a judge at the Hawaiian Science and Engineering Fair activities at Maryknoll Intermediate School and Kailua Intermediate School in Honolulu.

La Jolla Laboratory

- Docents from the Natural History Museum in San Diego visited the Center for a lecture and tour hosted by Betsy Stevens.

14 - Dr. Eric Barham, Fishery Biologist, presented a seminar at the Centro de Investigacion Cientifica y de Educacion Superior de Ensenada on the subject of biological observations from deep supermersibles. As a scientist with the Naval Undersea Center for many years, Dr. Barham pioneered in marine biological research using submersibles.

20 - Dr. Barham gave the same talk to students in Dr. James Mathewson class on the "Sea and Society: Multiple Uses of the Oceans" at San Diego State University.

Tiburon Laboratory

February 7 - Dr. William H. Lenarz of the Tiburon Laboratory presented a talk on "Shortbelly rockfish, Sebastes jordani: a large unfished resource in waters off California" to the CAL-NEVA Chapter of the American Fisheries Society at its annual meeting in Redding, California.

19 - Dr. Jeannette A. Whipple gave a presentation on "Effects of Pollutants on Striped Bass" at the Marin County Wildlife and Fisheries Advisory Committee Meeting held at the Marin Rod and Gun Club, San Rafael, California. One of the functions of the Advisory Committee is to advise the Marin County Board of Supervisors in areas of fisheries and wildlife.

VISITORS

Honolulu Laboratory

February 1 - Capt. Shoichi Yamamoto, officers, and trainees of the University of Hokkaido fishery training vessel Hokusei Maru, accompanied by Dr. Y. Matsuda, East West Center and Satoru Taguchi, HIMB, visited R. Shomura and R. Uchida.

6 - John C. Marr, WPRFMC, met with R. Shomura.

7 - Dr. Leighton Taylor, Director, Waikiki Aquarium, met with R. Shomura to discuss the Kewalo Research Facility.

14 - James McVey, NMFS, Galveston, Texas.

21 - John T. Everett and Dr. Tapan Banerjee, NMFS, Washington, met with Acting Laboratory Director R. Uchida.

25-29 - Linda Temprosa, Librarian, International Center for Living Aquatic Resources Management, Manila, Philippines.

29 - Deborah Turnbull, Information Specialist, International Development Research Centre, University of British Columbia, Vancouver, B.C. Canada.

La Jolla Laboratory

February 5 - Dr. John Parsons, National Institute for Medical Research, Mill Hill, London, U.K.

6 - Dr. A. Keith Taniguchi, School of Marine Sciences, University of Miami, Miami, FL.

- William Peterson, Oregon State University, Corvallis.

- Dr. Kwang W. Lee, Korea Ocean Research Development Institute, Seoul, Korea.

6-7 - Members of the U.S Marine Mammal Commissions's Scientific Committee met with members of the Oceanic Division.

13 - Dr. Adam Ben-Tuvia, the Hebrew University, Jerusalem, Israel.

16 - Edward W. Bowman, NMFS, Woods Hold, MA.

19 - Dr. Edward Zillioux, Environmental Protection Agency, met with Dr. R. Lasker and members of the Coastal Division.

20 - The Marine Fisheries Advisory Committee (MAFAC) visited the Center in connection with their meetings in San Diego. The group of advisors to the NOAA Administrator were welcomed by Director Barrett and later led on a tour of the Center by Drs. Lasker and Sakagawa.

_ Jim Johnson of PEG visited the Center for talks with Director Barrett.

22 - Martha Blaxall, Director, Office of Utilization and Development; Tom Billy, Chief, Seafood Quality and Inspection Division; Terry Leitzell, Assoc. Adm. for Fisheries; Richard Gutting, Director, Office of Policy and Planning all of NMFS, Washington, D.C.

27 - Norm Abramson, Director, Tiburon Laboratory.

Pacific Environmental Group

February 4 - Mr. Carl O. Erickson, Climate Analysis Center, NMC, NOAA, Washington, D.C.

Tiburon Laboratory

February 6 - Thomas L. Ghia, Santa Cruz Commercial Fish Association, Santa Cruz, CA.

14 - Gerald Bowes, State Water Resources Control Board, Sacramento, CA.

- Pat Coulston, Ecological Analysts, Inc., Concord, CA.

- Abe Cuanang, Sport Fisherman, South San Francisco, CA

- Curtiss O. Davis, Tiburon Center for Environmental Studies, Tiburon, CA.

- Richard J. Hansen, California Department of Fish and Game, Rancho Cordova, CA.

- Marvin Jung, State Water Resources Control Board, Sacramento, CA.

- David M. Kohlhorst, California Department of Fish and Game, Stockton, CA.

- Lis Olesen Larsen, University of Copenhagen, Denmark (University of California, Berkeley).

- Kris Lindstrom, Pathology Department, University of California, Davis, CA.

- Richard S. Nishioka, Department of Zoology, University of California, Berkeley.

14 - Judy Sakanari, State Water Resources Control Board, Mill Valley, CA.

- Don Stevens, California Department of Fish and Game, Stockton, CA.

- Susan Stingle, State Water Resources Control Board, Mill Valley, CA.

- Ed Tavasieff, Sport Fisherman, San Francisco, CA.

- Collin Wing, Charter Boat Operator, San Francisco, CA.

20 - Daisy L. Gaston, SWFC, La Jolla, CA.

- Nelson Ross, NOAA/EDIS, La Jolla, CA.

21 - Jim Sugar, National Geographic, Washington, D.C.

- Cliff Tarpy, National Geographic, Washington, D.C.

26 - Paul Haberzettl, OCE Industries, Sunnyvale, CA.

MEETINGS AND TRAVEL

Honolulu Laboratory

February 6 - Honolulu Laboratory Director Richard S. Shomura, Dr. Andrew E. Dizon, Leader, Experimental Ecology of Tunas Task, and Mary Lynne Godfrey, Administrative Officer, attended a meeting at the Office of the Department of Transportation, State of Hawaii, to discuss the Kewalo lease.

8 - R. Shomura and M.L. Godfrey met with J. Kulikowski from Washington, D.C. to review the Kewalo lease.

12-13 - R. Shomura, Drs. J. Wetherall, R. Mendelssohn, and M. Adams and H. Yuen attended a meeting of the Billfish Plan Development Team and the Advisory Subpanel in the conference room.

13 - R. Shomura met with Brian and Pattie Johnson, George Balazs, Hawaii Institute of Marine Biology (HIMB), University of Hawaii, W. Gilmartin, Naval Ocean Systems Center, Honolulu, R. Uchida, Dr. Dizon, and Eugene Nitta, Western Pacific Program Office (WPPO), SWR to discuss Hawaiian monk seals.

- Drs. R. Mendelssohn, M. Adams and J. Polovina and H. Yoshida attended a meeting of the spiny lobster Plan Development Team and the Advisory Subpanel in the seminar room.

- R. Shomura chaired a meeting to discuss plans to coordinate research on fishery development in the western Pacific. Present at the meeting were R. Uchida, H. Kami, Department of Agriculture, Guam; J. Villagomez, Marine Resources Development, Northern Mariana Islands, Dr. P. Callaghan, University of Hawaii Sea Grant, J.C. Marr, Western Pacific Regional Fishery Management Council (WPRFMC), and D. Nada, Pacific Tuna Development Foundation.

14-15 - R. Shomura attended the WPRFMC meeting at the State Capitol.

18 - R. Shomura departed Honolulu for Perth, Australia to participate in meetings of the Indian Ocean Fishery Commission's (IOFC) Committee on Management of Indian Ocean Tuna and the Indo-Pacific Fishery Commission's Special Committee on Management of Indo-Pacific Tuna, and the IOFC 6th Session.

La Jolla Laboratory

December 14-15 - Fred Kellenberger traveled to Portland to attend the Pacific Marine Fisheries Commission (PMFC) meeting on data requirements.

January 31 - February 8 - Dr. P. Smith was in Los Angeles to present two papers on anchovy at the American Society of Limnology and Oceanography meeting and to hear a review of upwelling effects at the American Geophysical Union International Symposium on Coastal Upwelling.

3-8 - L. Eber, M. Laurs, R. Lynn and R. Owen traveled to Los Angeles to attend the International Symposium on Coastal Upwelling. Dr. Laurs continued on to Washington, D.C. to deliver data samples at Emory University.

3-16 - Dr. D. Huppert traveled to Melbourne, Australia to participate in a workshop and seminar on Economic Aspects of Limited Entry in Fisheries.

4 - Dr. Reuben Lasker attended an American Society of Limnology and Oceanography meeting at the University of Southern California.

4-6 - Planning Officer David Mackett traveled to Seattle, WA to discuss program planning and budgeting with the Northwest Center and Region.

8-10 - Dr. Lasker was in Idyllwild, CA to attend a planning meeting on California Current Upwelling Study.

11-13 - Drs. G. Sakagawa and W. Parks were in Miami, FL to attend a planning meeting for U.S. ICCAT research.

13-15 - J. Carr traveled to Bay St. Louis, MI to attend a meeting on NMFS 1982 funding for engineering.

14 - A. MacCall attended the PFMC meeting in Portland to represent the Jack Mackerel and Anchovy Teams.

14-15 - F. Kellenberger was in Portland, OR to attend a PMFC Data Goals Committee meeting.

14-17 - I. Barrett traveled to Honolulu, HI to attend the Pacific Basin Development Conference.

19 - D. Hannan and A. MacCall attended a planning branch meeting in Long Beach to review the Long Beach computer facility.

26-27 - Dr. M. Laurs traveled to Los Angeles to present a lecture to the Southern California Coastal Water Research Project and to attend a SEASAT distribution system meeting in Eureka.

27 - B. Remington traveled to Terminal Island to discuss administrative matters.

Pacific Environmental Group

February 3-9 - Dr. Richard Parrish and Andrew Bakun traveled to Los Angeles, CA to attend the IDOE International Symposium on Coastal Upwelling.

3-15 - Lt. Dale Bretschneider traveled to the U.S. Merchant Marine Academy, Kings Point, New York to attend a refresher training course for NOAA officers preparing for return to sea duty.

4-5 - Dr. Douglas McLain traveled to Boulder, CO to present a progress report to EPOC's Principal Investigator's meeting.

11-13 - Gunter Seckel traveled to Los Angeles, CA to attend a course, "Principles of Management for Research and Technical Managers."

11-15 - James H. Johnson traveled to Washington, D.C. for fishery consultations.

18-22 - James Johnson traveled to La Jolla, CA and Terminal Island CA for fishery consultations.

22-23 - Paul Sund traveled to San Francisco, CA to participate in the Golden Gate Marine Center Workshop.

26-28 - Dr. Richard Parrish traveled to La Jolla to participate in a planning meeting on the California Coastal Fisheries.

Tiburon Laboratory

February 6-8 - Tina Echeverria traveled to Monterey and Morro Bay, California, to describe opportunities for temporary employment with the Rockfish Analysis Task.

11-13 - Tina Echeverria traveled to Eureka and Fort Bragg, CA to describe opportunities for temporary employment with the Rockfish Analysis Task. During this time, she also collected otoliths taken from samples of rockfish caught at those two locations.

12-14 - Ed Ueber chaired the Groundfish Plan Development Team Meeting held in Portland, Oregon and presented the Groundfish Plan to the Pacific Fishery Management Council.

14-15 - James R. Chess traveled to Seattle, WA to attend a meeting on cruise planning of the NOAA ship, Oregon. He also met with two netmakers to discuss net design.

15 - Sus Kato and Ed Ueber attended a meeting at Sausalito, CA called by Andrea Katz of the Pacific Coast Federation of Fishermen's Associations (PCFFA). Also present were William Gordon of the West Coast Fisheries Development Foundation; Zeke Grader, Director of PCFFA; Michele Wetmore, Consultant with California Fisheries Association; Joan Eesley, Consultant with California Seafood Institution, and Bob Pata of the Southwest Region. Subject of the meeting was to discuss ways in which members of the PCFFA could get involved in promoting and marketing of fish, particularly underutilized species.

20-21 - Sus Kato traveled to Los Angeles, CA to meet with a local surimi processor and three technicians from Japan who are here to help the processor upgrade his product. The technicians have agreed to help the staff process and evaluate surimi made from shortbelly rockfish, while they are in the United States.

21-22 - Norman J. Abramson and Ed Ueber attended a meeting of the Pacific Fishery Management Council's Groundfish Plan Development Team in Seattle, WA. At this meeting, Ueber presented the Groundfish Plan for NMFS comments which were considered by the Team. Director Abramson attended as an observer for the Southwest Fisheries Center.

25-27 - Ed Ueber traveled to Seattle, WA to attend the Saltonstall-Kennedy (SK) Fund Proposal meeting. Ueber attended as a representative of the Southwest Fisheries Center to comment on the scientific feasibility of SK proposals.

26 - Dr. William H. Lenarz presented a talk on "Comparative Rockfishology" at the Southwest Fisheries Center, La Jolla.

26-27 - James R. Chess attended the RUFAS II Workshop at the National Space Technology Laboratory, Bay St. Louis, MI. The primary purpose of the workshop was to discuss the feasibility and desirability of upgrading the current RUFAS II system or building a new one.

27 - Norman J. Abramson, Dr. Edmund S. Hobson, and Dr. William H. Lenarz attended a meeting on planning the Center's Coastal Fisheries research, held at the Southwest Fisheries Center, La Jolla.

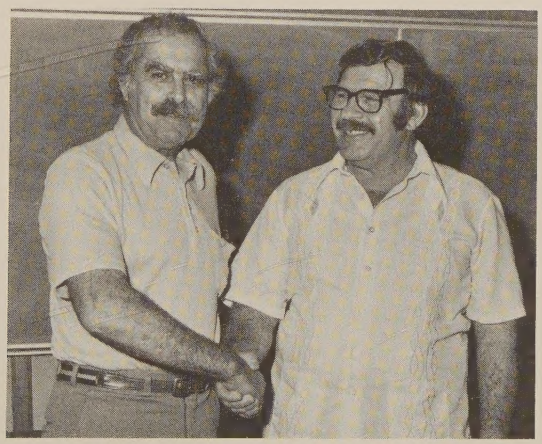
La Jolla Laboratory

At an assembly at the Center on February 19, Center Director Barrett presented awards to the following:

Mary Pierce, Clerk-Typist - $300 Cash Award for Outstanding Performance.
Receiving Length of Service awards were:
Eric Barham, Fishery Biologist - 25 years
Robert Nishimoto, Fishery Biologist - 15 years
Robert Owen, Oceanographer, who was not present - 20 years.

Mary Pierce

Bob Nishimoto



Eric Barham

Tiburon Laboratory

At a general staff meeting at the Tiburon Laboratory on February 22, 1980, Director Norman J. Abramson presented a 20-year length-of- service pin to Pete E. Benville, Jr.

PERSONNEL

Honolulu Laboratory

February 13 - Laurie L. Tsuji, Computer Technician - 1040-h appointment.

La Jolla Laboratory

February 9 - Michael Deerman, Dale Fellbaum, Tom Duffy, and Darrell Lee, Computer Technicians - Transfer to Naval Ocean Systems Center.

10 - Thomas Polacheck, Fishery Biologist - Conversion to intermittent appointment.

- James Zweifel, Mathematician - Transfer to Southeast Fisheries Center, Miami Laboratory.

Tiburon Laboratory

February 10 - Mark E. Kobe, Biological Technician - Temporary appointment.

- Kimberly Deitrich, Clerk-Stenographer - Conversion to CCPT.

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